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ABSTRACT

This essay defends a critical realist perspective on the ontological and epistemological theories of Humberto Maturana. In the process, the paper presents an extended example of what has come to be known in contemporary realist circles as the epistemic fallacy, and underlines the negative results which inevitably plague philosophical theories that contain such mistakes. A major concern of the essay is to demonstrate the inadequate nature of Maturana's particular conception of ontology. Sections include: (1) "Introduction"; (2) "Contradiction"; (3) "Maturana's Ontology of the Observer"; (4) "Cognitive Distinctions and Existence"; (5) "Skepticism and the Argument from Illusion"; (6) "On Worldmaking"; (7) "The Role of the Observer"; and (8) "The Linguistic Consensus." Lists 142 references. (YP)

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A PICKWICKIAN TALE: MATURANA'S ONTOLOGY OF THE OBSERVER

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A PICKWICKIAN TALE:
MATURANA'S ONTOLOGY OF THE OBSERVER

3.1 INTRODUCTION

In this essay I will defend a critical realist perspective on the ontological and epistemological theories of Humberto Maturana.[1] In the process I hope both to present an extended example of what has come to be known in contemporary realist circles as the epistemic fallacy,[2] and underline the negative, often contradictory, results which inevitably plague philosophical theories that contain such mistakes.

Ironically (given that Maturana does in fact commit the epistemic fallacy), a unique aspect of Maturana's doctrine is its explicit *ontological* dimension. A major concern of the present essay, therefore, is to demonstrate the inadequate -- in fact

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[1] Many of Maturana's arguments mirror those put forward by some of the most influential theorists of the modern analytic/linguistic tradition, including the "radical" philosophers of science Kuhn (1962) Feyerabend (1975) and Hanson (1958), Richard Rorty (1979,1981), the "irrealist" Nelson Goodman (1978), as well as the "internal realist" Hilary Putnam (1978, 1981, 1989). In fact, in discussing what he calls the "puzzle" of perception, Goodman cites Maturana's early neurophysiological studies of vision as offering some evidence for the conclusion that "the visual system [has] fun making a world to suit itself" (Goodman: 1978:73n-79).

[2] See Bhaskar:1978:36-8. Briefly, that fallacy consists in the reduction of being to knowing or, displacing this, in terms of language or discourse, the latter signaling some type of "linguistic fallacy" (Bhaskar:1989:181; 1978:36-8) or "myth of linguistic enclosure" (Pols:1986:25). What all such views share is the assumption that ontological questions can always be reparsed in epistemological form.

contradictory -- nature of Maturana's particular conception of ontology. In the end -- and despite Maturana's apparent willingness to discuss ontological matters -- his system clearly signals a reduction of being to knowing (the epistemic fallacy) in the strongest possible sense.

We shall see that Maturana's conception of reality is a purely *subject-dependent*, "Pickwickian" notion, whose initial plausibility arises from a unfortunate and subtle equivocation on the independence of the objects of the world from our theories or descriptions. Should my defense of realism succeed, it will have contributed to the effort to reclaim reality *for itself*.[3] I will make but one brief ethical remark: on the assumption that our changing the world hangs on our interpreting it aright, it is a necessary condition for reversing the tide of ecological and social ruin which we ourselves have produced that we firmly recognize that the greater part of *reality* -- the natural world and that which serves as material for our various "constructions" -- is essentially independent of humans and their activities. To think otherwise is to remain trapped in a pernicious and delusory anthropocentrism from which only a radically one-sided view of the world can follow.

I will assume that the successful defense of this decisive "independence dimension" (see note 7 below) of realism requires

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[3] See Bhaskar:1989.

that we construct a viable scheme-reality dualism.[4] In particular the following condition of independence (C_{ind}) must be satisfied in order to sustain a realist view of the external world:

(C_{ind}): The independence of the common-sense and scientific entities of the world from our schemes of representation does not render the world an ineffable, inaccessible realm of unspecifiable objects.[5]

In arguing for realism, then, I reject all inferences from the truism (1) all questions of the form "what is there?" are necessarily asked within a description or theory, to (2) we "cut up the world into objects" when we chose a certain scheme of representations, description or theory of the world (Putnam:1981:49-53).[6] That is just to say that realists do not

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[4] On the Rortian assumption that all attempts to disjoin scheme and reality must fail, the following dilemma seems real: descriptions of reality in terms of any one of our present schemes of representation vitiates the independence of that reality from all schemes. On the other hand, all descriptions of a scheme-neutral reality seem to result in the unintelligible notion of an unconceptualized given. As Rorty himself explains, "I want to claim that 'the world' is either the purely vacuous notion of the ineffable cause of sense and goal of intellect, or else a name for those objects that inquiry at the moment is leaving alone..." Rorty:1981:15). All this of course rests on the equivocation between the theory-dependence of our descriptions and the theory-dependence of that which is described.

[5] See Salinas:1989:113.

[6] Rorty follows Putnam's lead when he argues from (1) we never encounter reality "accept under a given description" to (2) we should "see ourselves...as making worlds rather than finding them" (Rorty:1981:xxxix). And here is Maturana's version: "perception should not be viewed as a grasping of an external reality, but rather as the specification of one" (Maturana: 1980a:xv).

equivocate on the essential independence[7] of known objects from the knower.

3.2 THE CONTRADICTION

Before I set out in any detail the particulars of Maturana's system, I should explain the charge of inadequacy I have already directed towards its ontological dimension.. The problem arises from the following epistemological contradiction (EC) which is embedded within the theory:

(EC):

1. Maturana adopts an epistemology-NR (where NR stands for "no access to reality") that insists on the futility of any

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[7] To assert the essential independence of the object from thought is to say that the object can *exist* independently of thought. Realists are committed to the existence of an objective realm outside of thought (or, following Marx, human activity in general (see Ruben:1977:ChII)) in the widest sense. This presents a minor problem for the realist involving those things which are essentially dependent on the social realm. It follows from our definition of essential mind-independence that mind-dependent objects need not exist "in the mind," but merely have their existence *imply* the existence of human activity or thought. A painting or hammer (*but not the "raw materials" from which they are made!*), for example, are clearly mind-dependent in this sense. Something is a hammer or a painting in virtue of being used in a certain fashion or being so designed to be used. This holds true, in fact, for all social or cultural objects (including the state, the economy, science, art, and so on) which depend for their existence on purposeful human activity. Does that make realism irrelevant to the social world? Certainly not, for all these (social) things are materialized in, and dependent on that which is essentially mind-independent, namely, the natural world. In other words, the essential independence goes one way: "nature is essentially independent of thought, but thought is not essentially independent of nature" (Ibid:74). See also Devitt:1984:14-15.

and all reality claims.[8]

2. Maturana also embraces an ontology/metaphysics called structure determinism which contains, like all such ontologies/metaphysics, a reality claim.

To deny the possibility of "reality claims" is to reject as meaningless any and all ontological claims about the way the world "really is" independent of the knower's formative or constructive power. What all such views share is the general idea that "the known is always a by-product of the knower" (Held and Pols:1985a:513-514). Upon adopting an epistemology-NR one cannot, without contradiction, make any ontological claims about entities or events as they may be *independent of the knower* -- the mark of ontological claims in the common sense.[9] (2) then reduces to the claim that Maturana is in fact making explicit claims about how things are independent of the knower.

I take (EC) to signal, in D.H. Ruben's phrase, an instance of strong epistemological inconsistency.[10] Two claims are strongly epistemologically inconsistent if (a) they are logically consistent and (b) the truth of one implies that there can be no

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[8] A note on terminology: I take it that any epistemology-NR is an antirealist and therefore idealist epistemology. Held and Pols (1985a) supply a number of formulations of such antirealist epistemologies, ranging from "our world of experience is socially constructed" to "reality is linguistic" (pp. 512-513).

[9] In Held's and Pols' words: "The contradiction consists in making, on the one hand, reality claims about (in this case) the nature of human cognition/observation -- perfectly general claims about how human cognition/observation functions, no matter where or how it is exercised -- and, on the other hand, insisting that this function is such that it can never in principle do anything but create its own "reality" (Held and Pols:1987:466).

[10] See Ruben:1977:23.

possible evidence for believing that the other is true. Maturana is committed to strong epistemological inconsistency in believing both (1) and (2) above to be true: from the truth of his epistemology-NR it follows that there can be no possible evidence for believing that his theory of structure determinism is true.[11]

It would seem implausible to maintain that Maturana is unaware of limits placed on his ontology by his explicit epistemology-NR. Rather, I will argue that he believes his particular ontology to be uniquely capable of attaching to his

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[11] Ernst von Glasersfeld has suggested to me a possible objection to this line of reasoning. Maturana could claim, in keeping with his pragmatic outlook, that neither (1) nor (2) are in any meaningful sense <u>true</u>, but merely "useful" in some way, possibly in making sense of our experience. While I will not grant to Maturana the luxury of doing purely conceptual analysis, it still seems to me that this flight from truth to pragmatics does nothing to solve the apparent conflict between the two claims. If one (the first, say, which concerns the lack of any meaningful access to a reality outside of the mind) is used in a way that helps us sort out our experiences, then it should follow, on the pragmatic reading, that our experience is such that this tool "works for us" (rather than "is true"). This assumption about our experience could prove useful, for example, in explaining our apparent inability to decide whether we are simply "brains in vats" or, more generally, to distinguish perceptually between illusions and "reality" (more on that below). On the other hand, to whatever extent the second, ontological claim (that we are structure determined entities) proves useful as an hypothesis, the clarification that results from applying the first claim to our experiences is lost. It no longer makes sense, in other words, to say that our experience is like we supposed it was as a result of applying the first claim to it: in this case, we could in fact distinguish between the possibility that we are brains in vats and another, better interpretation of our experience; namely, that we are in fact structured the way Maturana's ontological doctrine of structure determinism says we are. In other words, the epistemological inconsistency between (1) and (2), read only as a pragmatic conflict, suggests that the very *usefulness* of one claim depends on the *uselessness* of the other.

epistemology-NR without contradiction.[12] The obvious candidate for this role is a *subject-dependent* or, in Maturana's words, a "relativistic" ontology. We shall see that it directly follows from his theory that the latter is all that can be had. But the universal applicability (and truth) of the doctrine seems somehow to have escaped the very relativistic strictures it entails, and Maturana (at times explicitly) offers general ontological claims for that doctrine -- hence (2) of (EC) above.

The force of uncovering this confusion of course rests on the implicit assumption that one's epistemology (in the traditional sense which is concerned with the nature of knowledge -- what knowledge is, as distinct from say, mere prejudice or belief) must be in *mutual support* with one's ontology (that is, of course, concerned with the questions not about the nature of knowledge, but about *what* we know[13]). I will assume that the reader is in agreement with me about this necessary mutuality of

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[12] See Dell, 1985:4-5; Held and Pols, 1987:457.

[13] It is of course necessary that realists reject all linguistic arguments that purport to show the "meaninglessness" of ontology and metaphysics (Dummett, Williams, Luntley), or that settle on the Quinian conclusion that "existence is what the existential quantifier expresses" (see, for example, Williams: 1981). Yet I will consider further (section 3.5) the extent to which one's ontology and epistemology involve some sort of necessary "reciprocal containment" in Quine's (1969) phrase. One side of that containment is well recognized by Maturana (and other anti- realists); namely, that ontology is contained within epistemology in the sense that "the evidence for [ontology] is just what our epistemology, our theory of method and evidence, tells us it is" (Gibson:1989:4). On the other hand, the idea that ontology "contains" epistemology is not as well recognized (or even accepted) and will be a point of focus for my criticisms of Maturana.

epistemology and ontology, at least to the point where no blatant contradiction (like the one that I attribute to Maturana) is allowed.[14]

Furthermore, I will argue that Maturana's "relativistic" or subject-dependent ontology both exemplifies the reduction of being to knowing (the epistemic fallacy) and serves temporarily to render invisible (EC). To anticipate: the idea that something *exists*-relative-to-a-description only makes sense when taken as a metaphorical way of saying: the description of x exists.[15] The use of this metaphor helps explain one way in which Maturana's doctrine seems successfully to "leave us with some of the familiar world" (Devitt:1984:140).[16] Yet seen for what it is,

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[14] Held and Pols (1987) suggest that some of the defenders of Maturana's doctrine (as outlined at least by Dell:1982, 1985, 1987) are subliminally aware of this contradiction and so take evasive action whenever it threatens to emerge clearly. That action -- which is reflected as well in the writings of one philosophical hero of these idealists, Richard Rorty -- consists in "making a metaphysical/ontological claim when that is necessary for establishing one part of the philosophical doctrine which is being defended, and then depriving that claim of seriousness whenever it begins to become manifest that persistence in the claim will lead to contradiction" (Held and Pols:1987:456). Devitt's analysis of the "radical" philosophers of science (Kuhn and Feyerabend) yields a similar description of those philosophers as "ontologically coy" (Devitt:1984). I do not deny these essentially psychological claims but attempt to account for the "evasive action" and ontological "coyness" alike as necessary counterparts of the epistemic fallacy.

[15] See Devitt:1984:140.

[16] Devitt (1984) attributes a similar position to Kuhn and Feyerabend. In order to accommodate the "realist rhetoric" of the these philosophers of science, Devitt suggests that it is necessary to attribute to them the doctrine he calls "weak" (or fig-leaf) realism (p. 138). In order to avoid unnecessary proliferation of terminology, we should note that Devitt's doctrine of weak or fig-leaf realism signals the use of that term

this metaphor says nothing at all about a world that is independent of our various ways of describing it. To the extent that Maturana recognizes the metaphorical nature of his "relativistic ontology" the need for evasive action presses to the fore. This is precisely the reason behind Maturana's implicit adoption (in contradiction to his stated epistemology-NR) of a non-radically relative ontology. It is of no consequence that Maturana explicitly claims *not* to be "interested" in a "metaphysical independent reality" (see Dell:1987:462), for it is a corollary of our analysis of the epistemic fallacy that the "lack of sufficient interest [in ontological matters] is not sufficient to prevent one from making a reality claim" (Held and Pols:1987:466).

My task for the remainder of this essay will be to consider in some detail Maturana's constitutive ontology of the observer in order to defend my attribution of (EC) to that doctrine. I

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in only a rhetorical sense. According to that doctrine what exists and has a nature independently of our conceptions is only an ineffable, unknowable thing (or things) in itself. "Weak realists" then are not committed to the independent existence of the objects of our everyday world or even of science -- these things are all "mind dependent" in the sense that their nature and existence depends, roughly, on the ways in which we think about them. Therefore, despite their apparent willingness to talk about a noumenal realm of things in themselves, I shall consider them simply idealists. We shall see that the same can be said for Maturana in those rare occasions where he refers to the necessary ontological commitment to a "substratum" that is entailed by his epistemology. According to such doctrines commitment is only to the independent existence of Kantian things-in-themselves. The everyday world of common-sense and scientific objects exists only relative-to-theory. We are left with nothing but a world that is, in Rorty's words, "well lost" (Rorty:1981).

will tentatively conclude that, despite all the explicit claims to the contrary, there are only two possibilities for resolving this particular tension: (i) Maturana's doctrine might be reinterpreted in the appropriately realist way. This would entail modifying his epistemology-NR to account for his apparent access to workings of his ontology of "structure determinism." (ii) Failing to achieve (i) that doctrine might consistently be viewed as a form of radical skepticism or solipsism. Obviously, a "solution" along the lines of (ii) merely rids Maturana of the contradiction between his stated epistemology and his (implicit) ontology while leaving his particular doctrine with nothing to recommend it.[17] Outside of finding a solution along the lines of (i) or (ii), Maturana's theory remains a victim of (EC). Moreover, it does not matter for the purposes of this paper that one may be inclined to accept a solution along the lines of (ii), for Maturana clearly rejects both (i) and (ii).

3.3 MATURANA'S ONTOLOGY OF THE OBSERVER

Maturana is probably best known to the scientific nonspecialist as a co-author (with Lettvin, McCulloch and Pitts) of the paper "What the Frog's Eye Tells the Frog's Brain." Since

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[17] Nothing, that is, to those (including Maturana at times) who reject such doctrines. In this regard I follow Russell (1948) in supposing that Cartesian doubt carried "too far" reduces philosophy to a mere technical game which looses all seriousness (p. 180). That is partly because such doubt, once admitted in any particular domain of our knowledge, inevitably undermines knowledge claims almost everywhere (See Devitt: 1984:51). The *most* one is left with, as Russell argues, is a very mysterious "solipsism of the moment" (p. 181).

the publication of that essay, his research has centered on the task of specifying the nature of the living in the form of a systematic theoretical biology. In the introduction to his early *Biology of Cognition* (originally published in 1970) he describes that task as finding solutions to two seemingly distinct questions: namely, (1) What takes place in the phenomenon of perception? and (2) What is the organization of the living (Maturana:1980a:xiii-xv)? His eventual and somewhat surprising conclusion is that cognition and the operation of the living system are in fact identical phenomena (Ibid:xvii).[18]

On the basis of his neuro-physiological studies of color vision, Maturana concludes that the nervous system of an observer must be a closed neuronal network. On the assumption that perception is a biological phenomenon, one can never say in absolute terms what constitutes an input to our nervous system since each of its states, serving as an "input," can modify the system as an interacting unit. The "closed" and self-referential processes of cognition and perception directly imply that all changes within (living) systems are determined by their own organization and structure. That is to say that living

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[18] Dell (1985) suggests that Maturana's equating of cognition with living "precisely parallels [Gregory] Bateson's equating of mind with...the world of living systems" (p. 5). Dell argues that Maturana's ontology of the observer supplies the necessary ontological counterpart to Bateson's cybernetic epistemology (which contained only an "implicit" ontology) (p. 1). Although Dell finds Bateson's non-ontological cybernetics (which clearly is an instance of the epistemic fallacy) "tautological and a bit mystical" (p. 5), he fails to see that Maturana's "relativistic" ontology is similarly inadequate.

systems are *structure determined*.

Maturana's doctrine of structure determinism is a generalized version of his theory of autopoietic organization applied to non-living as well as living entities.[19] The circularity of structure determined systems implies a radical autonomy that Maturana attempts to capture in his term *autopoiesis*.[20] Here, then, is Maturana's answer to the second question: autopoiesis is both necessary and sufficient to characterize the organization of the living.

> [I]t is the circularity of its organization that makes a living system a unit of interactions, and it is this circularity that it must maintain in order to remain a living system and to retain its identity through different interactions (Maturana:1980a:9).

These interactions in turn "generate language, description and thinking" (Ibid:v). In short, Maturana's claim is that the process of cognition is a "strictly subject-dependent creative process" (Ibid:49). Paul Dell comments on the significance of Maturana's "seemingly modest" characterization of the organization of the living:

> ...if the organization of a living system is circular, then that organization is a *closed* organization -- not thermodynamically closed, but organizationally closed. The significance of organizational closure is that it directly implies autonomy.... Each living system has it own autonomous individuality because the nature of its structure fully specifies how the system will behave under any and all interactions....Because interactions with the environment cannot specify how an organizationally

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[19] See Dell:1985.

[20] Maturana introduced the term "autopoiesis" in his 1972 essay "Autopoiesis: The Organization of the Living." Prior to that essay he relied on the expressions "circular organization" and "self-referential systems" to make reference to the same phenomenon.

closed living system will behave, it therefore must be the case that such systems do not have inputs (and outputs)! (Dell:1985:6).

In other words, living systems qua closed autopoietic systems, *cannot receive any information at all* (Ibid:6). Living systems like humans are, in the cybernetician W.R. Ashby's words, "information tight" (Ibid:6). It is the structure of the living system -- and not any characteristic of the information "received from the environment" -- that determines how it will "behave" or respond "under any and all interactions" (Ibid:6):

For every living system its particular case of self-referring circular organization specifies a closed domain of interactions that is its cognitive domain, and no interaction is possible for it which is not prescribed by this organization (Maturana: 1980a:49).

It is not simply the behavior or actions of an living system that are so internally determined but *what one can know as well.* The cognitive domain of a living system, given its self-referring circular organization, places absolute limits on the possible interactions (including knowledge) available to that system:

...accordingly, for every living system the process of cognition consists in the creation of a field of behavior through its actual conduct in its closed domain of interactions, and not in the apprehension or the description of an independent universe (Maturana:1980a:49).[21]

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[21] One might interpret the above passage as either (1) making the plausible claim that we are incapable of knowing or describing an "independent universe" of things-in-themselves; or (2) suggesting, pace Putnam, that the independent universe that the realist purports to know and describe requires a "God's eye view" which lies outside the possible "domain of interactions" available to humans. It should be clear at this point that if Maturana is merely saying something like (1) then he poses no threat to realism (as I have been using the term) and therefore to any world "worth fighting for" (see note 16 above). (2) is probably closer to the view that Maturana actually holds.

The realist idea that we are capable of describing or knowing a world that exists independently of us is obviously rendered impossible. The question, "what is the object of knowledge?" is for Maturana a meaningless one:

> There is no object of knowledge. To know is to be able to *operate adequately* in an individual or cooperative situation (Ibid:53).

An "adequate" operation is one that is directly or indirectly subservient to the maintenance of a person's living organization or autopoiesis. These operations serve as the only final source of reference for truth and rationality, while the self-referential nature of persons makes all such frames of reference necessarily "relative" in a very strong (i.e., solipsistic) sense (Ibid:57). In order to draw out these radically idealist elements, I will now consider in more detail the type of operations Maturana assigns to living systems.

Maturana writes: "living systems are autonomous entities, even though they *depend on a medium for their concrete existence and material interchange*" (Maturana:1978:36, emphasis added). Has he not given it all away here? Maturana insists on the necessary *subject dependent* nature of all scientific claims, including I presume, scientific descriptions of the relations that hold between an entity and its "medium" (Ibid:28-9). The specific scientific explanations he is interested in supporting -- and the only statements that are in his view scientific -- are "subject dependent, valid only in the domain of interactions in which the...observer exists and operates" (Ibid:29). He in fact claims that such statements are only valid in relation to the situation facing the *standard* observer, a qualification that seemingly allows him to escape the solipsistic implications of not so characterizing the observer. However, it is clear from his epistemology that such a distinction (that of a standard observer from, I suppose, a particular observer like himself) is entirely dependent on the cognitive operations of a particular observer. So he is still left with the isolated observer and his/her operations of distinction.

3.4 COGNITIVE DISTINCTIONS AND EXISTENCE

Maturana claims that "unity" (distinguishability from a background and, hence, from other unities) is the "sole necessary condition for existence in any given domain" (Maturana: 1980a:96). Do Maturanian unities, like Hume's unsensed sense-data possess objective existence? In other words, is Maturana, like the idealists Hume and Berkeley before him, committed to the *existence* dimension of traditional realist claims? The answer appears to be no. Unities, he tells us, are those entities which result from the performance of our most "basic cognitive operation" -- the operation of distinction. By means of this operation, and acting as "observers,"

> ...we specify a unity as an entity distinct from a background, characterize both unity and background with the properties with which this operation endows them, and specify their separability. A unity thus specified is a simple unity that defined through its properties the space in which it exists and the phenomenal domain which it may generate in its interactions with other unities (Ibid:xix).

It follows from Maturana's epistemology-NR that this most basic cognitive act, distinguishing a unity from its background (and thereby defining its domain of interactions or "medium") supplies all of the "reality" that either the entity or its medium can possess:

> A universe comes into being when a space is severed into two. A unity is defined. The description, invention and manipulation of unities is at the base of all scientific inquiry (Maturana and Varela:1980a:73).

However, as we have seen (see note 21 above) Maturana also maintains, quite reasonably, that "living systems *depend on a*

medium for their concrete existence." How could an autonomous living human being -- a "subject" --*both* determine the nature of its relation with its environment or medium and have its "concrete existence" determined by that same medium? Maturana suggests that "medium" is equivalent to "domain of interactions" (Maturana:1980a:xxi). However, since all domains of interaction are defined upon the specification of a unity by an observer ("a universe comes into being when a space is severed into two") the very nature and existence of that medium is entirely dependent upon the operations of distinction performed by the observer.

While Maturana does invoke a distinction between the "characterization" of a unity and the knowledge available to the observer of that unity, where the former consists in a "pointing to" the properties or organization of the unity and the latter consists in a "handling [description, I take it] of them in a metadomain of descriptions with respect to the domain in which he characterizes them," he readily admits that this distinction does not negate their common character as cognitive entities that "belong to the descriptive domain" (Ibid:xxiii). One can only conclude that the medium is and can be nothing but a cognitive entity, and that Maturana's description of the medium determining concrete existence is merely a misleading (to the extent that the reader thinks that he or she is still in possession of something of the real world) way of underlining the mind-dependent nature

of all reality.[22]

It is clear that Maturana's dictum "everything said is said by an observer" (Maturana:1980a:xxii), is not meant merely to underline the obvious and quite unobjectionable fact that every description of the world (something that is "said") which results in the specification of a unity is a cognitive distinction. Maturana wants to make the stronger claim (that is neither obvious nor entailed the language-or concept-dependent status of our descriptions[23]) that the existence and nature of every unity is entirely dependent on the operation of distinction performed by the observer. Here Maturana signals his rejection of the *independence dimension* of traditional realist claims along with any ontological commitments in the common sense. Maturana is quite clear about this: "the entity characterized [by the distinctions made by an observer] *is a cognitive entity* (Maturana:1980a:xxiii, emphasis added).

Given that Maturana rejects the independence dimension of realism, what would he claim that realists are doing when they talk about mind-independent entities? They are simply making

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[22] Held and Pols (1987) reserve the phrase "Pickwickian" ontology for Maturana's "uncommon" use of that word. They suggest, rightly, that Maturana (as well as Bateson (1972) and Dell (1985)) switches between the characterization of "structure determinism" as an ontology in the common meaning of that term and an ontology in the Pickwickian sense, or what I have been referring to as a subject-dependent or "relativistic" ontology (Held and Pols:1987:457).

[23] As Rorty rightly notes, there is "no inference from 'one cannot give a theory-independent description of a thing' to 'there can be no theory-independent things'" (Rorty:1979:279) -- but see note 6 above.

"distinctions upon distinctions" which result in a "metadomain of descriptions" in which the cognitive statements about those entities are made (Ibid:xxiii). Entities are, therefore nothing but cognitive entities, but once characterized

> ...the characterization is also subject to cognitive distinctions valid in the metadomain in which they are made by treating the characterization as an *independent entity* subject to contextual descriptions (Ibid:xxiii, emphasis added).

While talk of metadomains is confusing, one thing is clear: the notion that entities of our everyday world (or of science[24]) exist and have a determinate nature independently of the cognitive powers ("operations of distinction") of the mind is, for Maturana, a priori false, since it is precisely that mental activity which confers upon the entities of the world both their existence and nature:

> Thus, [the observer] both creates (invents) relations and generates (specifies) the world (domain of interactions) in which he lives by continuously expanding his cognitive domain through recursive descriptions and representations of his interactions....From this it follows that reality as a universe of independent entities about which we can talk is, necessarily, a fiction of the purely *descriptive* domain, and that we should in fact apply the notion of reality to this very domain of *descriptions* in which we, the *describing* system, interact with our descriptions as if with independent entities. (Maturana:1980a:51-2).[25]

Maturana's act of making "recursive descriptions" -- like

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[24] Maturana explicitly rejects the independent existence of so-called scientific entities as well as those of everyday life. (See Maturana:1988a:45).

[25] It is telling to note that despite all this emphasis on the "reality" of the descriptive domain, in the beginning pages of their *The Tree of Knowledge*, Maturana and Varela claim that their position can only be understood by the reader if he or she "has a direct experience that goes beyond all mere description" (p. 16).

Kant's object-constituting power of the mind -- is clearly something that is *internal* to the mind. So also must be the "material" (our very descriptions) that is worked up in this fashion and that constitutes that which Maturana enjoins us to "apply the notion of reality to" (in contrast to the fictional reality of "independent entities").[28] All that really exists, on this view, is the mind and the ever expanding "domain of descriptions" that constitute the observer's world.

Ironically, Maturana himself notes that the price paid for supposing that "only one's interior life exists" is solipsism (Maturana and Varela:1987:134). Yet Maturana's foundationalist insistence upon "theorizing from scratch"[27] presents a picture of isolated individuals locked within their minds. While Maturana is apparently willing to assume that certain theoretical and operational constraints on knowledge are immediately accessible

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[28] See also Ruben:1977:Ch1, where he argues that Kant's commitment ("independence claim") to the existence of "pre-conceptualized intuitions" that are essentially independent of the synthesizing operations of the mind is strongly epistemologically inconsistent with Kant's "interpretation claim" that any judgement or claims to knowledge necessarily presuppose the activity of interpretive thought. This instance of strong epistemological inconsistency is one that arises within the phenomenal realm and is not to be confused with the parallel inconsistency to be found in talking of noumena while holding that all knowledge is of phenomena. Yet the pre-conceptualized intuitions of the phenomenal realm are as unknowable as things-in-themselves: they stand in no relation whatsoever to the synthesis of the understanding.

[27] This is Devitt's phrase (1984:194). Maturana would presumably agree with Putnam's characterization of metaphysical realism as relying on a "magical theory of reference" (Putnam:181:47). The reason for that should be clear: in starting from a prison-house conception of language, both see the realist as attempting to "speak the unspeakable."

to the mind (namely, that "we should apply the notion of reality to a domain of descriptions"), those constraints clearly prevent any and all reference to a mind-independent reality and, therefore, to that which is other than "one's interior life."

Maturana is clearly guilty of equivocation between *constructing theories* and *constructing the world*. There can be no question that we construct our theories of the world; and talk that accompanies that activity about "cutting up" and "imposing on" experience makes good sense.[28] But this is quite different from saying that we *construct reality* or that we *construct the world*. All talk of the mind or language imposing on the world must seen for what it is -- simply a metaphor. Devitt makes the following point, one that is necessary for our analysis which claims to be uncovering ontological commitments that are kept well-hidden:

> ...it is very important to the appeal of the imposition view that [this] metaphor be taken literally. For then we still seem to have the world" (Devitt:1984:140).

Taking that metaphor literally means supposing that the operations of the mind or language are such that they create or produce the objects of the world:

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[28] That is to say that perception is *selective*. Mundle suggests the following ways in which that selectivity can manifest itself: "(a) that we can select what we see, touch, hear, etc., by controlling our movements; (b) that we can select which perceptible properties of objects, or which qualities of sense-data, we discriminate, by controlling our attention; (c) that the sensory apparatus with which we are endowed is selective in the sense that it discloses only *some* of the things around us (e.g. not bacteria) and only *some* of their properties (not e.g. their reflectance of ultra-violet waves)" (Mundle:1971:91-92).

> Without language and outside language there are no objects...we human beings are objects in a domain of objects that we bring forth and operate upon in language...(Maturana:1988a:38).

In what sense does Maturana still "seem to have the world"? Does it matter that he replaces the realist's ontological commitment to stones, trees and (possibly) electrons with phenomenal or experiential distinctions? Does his system allow this reduction of being to knowing? I will now attempt to answer these questions in the context of Maturana's treatment of perceptual illusions.

3.5 SKEPTICISM AND THE ARGUMENT FROM ILLUSION

Getting their start from a consideration of some common perceptual "illusions," Maturana and Varela (1987) note that what we often take as simple apprehension of something (such as color) "has the indelible mark of our own structure" (p. 22).[28] Commenting on two common visual illusions, they note that these simple experiments "...[do] not reveal an isolated situation that could be called (as is often the case) marginal or illusory" (Ibid:21). All this is valid, they claim, for "any other perceptual modality" (Ibid:21). We naively class daily

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[28] Here is Maturana's most recent example: "If one looks at the two shadows of an object that simultaneously partially intercepts the paths of two different lights, one white and one red, and if one has trichromatic vision, then one sees that the area of the shadow from the white light that receives red light looks red, and that the area of the shadow from the red light that receives white light looks blue-green" (Maturana:1988:9). The illusion is unavoidable: our experience of the illusion is unchanged by the knowledge that the area of the shadow from the red light "should look white or gray" because it receives only white light (Ibid:9).

experiences like these as illusions or hallucinations and not as perceptions "...claiming that they do not constitute the capture of an independent reality" (Maturana:1988a:10).

In other words, relying on a version of Cartesian skepticism and faced with the idea that scientific experiments can be used to demonstrate that the senses (most notably vision[30]) can be fooled, Maturana, in reductio ad absurdum fashion, uses that idea to then do away with science as the study of an "objective" (mind-independent) reality. Clearly much of the literature that

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[30] Devitt suggests a reason for the common emphasis on this particular "perceptual modality" in discussions of illusions. It is that such operationalists assign special significance to observability, which in turn is uncritically conflated with sight (Devitt: 1984:130). Van Fraassen (1980), for example, claims that a theory is "empirically adequate" if and only if it correctly describes what is "observable" (pp. 4-12). Theories may otherwise "save the phenomena" but cannot be said to describe and independent reality (Giere:1987:224). We should remain "agnostic" about that reality (Devitt:1984:126-128). Van Fraassen seems to think that the conclusion of empirical adequacy is somehow better supported than the scientific realist's on the grounds that the former does not go beyond that which is directly observable. (We can define "observational belief" as one that follows from an object x triggering a human's sense organs in a way that leads her to judge, for example, that x is F. If this belief follows without inferring it from some other belief, then we can say that she *observed that x is F.*) Giere points out on the logic of "satisficing" that the "logically weaker" claims of Van Fraassen's constructive empiricism do not necessarily add up to a more "adequate" explanation (p. 225): "If we assign *equal* value to the truth of both empiricist and realist hypotheses, the empiricist hypothesis, being more probable, would have greater expected value....But of course the realist would assign *greater* scientific value to true realistic hypotheses, which could give them greater expected value. So a realistic satisficer need not even be in the position of settling for second best" (Ibid:225). Even more to the point, our beliefs about observable entities (non-inferential beliefs in the sense noted above) may be just as fallible as many of our inferential beliefs about unobservables: "The [non-inferential, observational] belief is not 'given' to the sensory input" (Devitt:1984:132). It is, *like all our beliefs,* a result of human processing and interpretation.

talks about "brains in vats" and other rather fanciful reactions to the skeptical challenge contained in Descartes' First Meditation gets their start from this seemingly scientifically consistent view of perception that admits of no possible evidential or experiential distinction between perception and illusion. That the evidences of our senses "underdetermines" our views of "what there is" leads many to suggest that this scientific view of perception (that admits of underdetermination) is consistent with radically opposed views of the nature of cognition. In particular many critics of realism infer that

> The mere fact that a person, as a result of a perceptual experience, comes to believe that a certain object is in front of him does not establish that it is in front of him. It is compatible with our theory of perception that he should come to this belief and yet there be no such object in front of him. It is compatible with that theory that he should come to beliefs about the external world as a result of perceptual experiences and yet there be no such world at all (Devitt:1984:50).[31]

That is just to say that (scientific) knowledge has in a way given rise to skepticism:

> Doubt prompts the theory of knowledge, yes; but knowledge, also, was that which prompted the doubt. Skepticism is an offshoot of science. The basis for skepticism is that awareness of illusion, the discovery that we must not always believe our eyes. Skepticism battens on mirages, on seemingly bent sticks in water, on rainbows, after-images, double images, dreams. But in what sense are these illusions? In the sense that they seem to be material objects which they in fact are not. Illusions are illusions relative to a prior acceptance of genuine bodies with which to contrast them....[E]xamples of mirages...and the rest are similarly parasitic upon positive science, however, primitive (Quine:1975:67-8).

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[31] That is just to say that realists take fallibilism (not skepticism) seriously: one could be wrong about almost anything. The realist is prepared to say that we *could*, for example, be brains in vats -- it is just that we are not!

This is not to accuse the skeptic, however, of begging the question:

> He is quite within his rights in assuming science in order to refute science; this if carried out, would be a straightforward argument be reductio ad absurdum. I am only making the point that skeptical doubts are scientific doubts. (Ibid:68).

Quine concludes on the basis of his claim that skepticism presupposes science, that *science* is therefore justified in using scientific knowledge in its own defense. Barry Stroud (1984) has criticized Quine on just this point. Stroud suggests that Quine's admission that the skeptic is "within his rights" to argue by reductio that so-called scientific knowledge is false, undercuts the scientists ability to use that (scientific) knowledge after the reductio has shown it to be, as Quine indeed admits, "vulnerable to illusion on its own showing" (Quoted in Gibson:1989:4).[32] Quine's reaction to this challenge is to claim that the skeptic is "overreacting" (Ibid:4).

Stroud has interpreted this charge as meaning that the skeptical position is relatively "unconfirmed" in comparison with some other views (Ibid:4). This is clearly not what Quine had in mind. It is rather that the skeptic's mistake lies in the

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[32] Devitt makes the same point with regard to the type of "Realism" he hopes to defend (but not against the skeptic): "...the skeptic need not make any knowledge or (belief) claims. He asks the Realist to justify his position and uses assumptions that *the Realist* seems in no position to deny to show that these attempted justifications fail....The argument therefore, is something of a *reductio* of Realism: the Realist perspective itself shows Realism to be unjustified" (Devitt:1984:48-9). But Devitt may be giving up to the skeptic more than is necessary. I can not argue the point here, but see Tom Vinci's (1986) review of Stroud's book where he suggests that the reductio can not successfully be used against science as a whole.

failure to appreciate how epistemology and ontology reciprocally contain one another. As I have noted, the skeptic does recognize one direction of the containment; namely the extent to which epistemology contains ontology. The skeptic is well aware that our theories of method and evidence (our epistemology) determine what our scientific claims about the world (our ontology) might look like. What the skeptic overlooks is the extent to which ontology contains epistemology:

> The skeptic may indeed use a portion of science to bring doubt to bear upon science, but only by presupposing the truth of other portions of science....Skepticism...presupposes some further ontology: "we might reasonably doubt our theory of nature even un its broadest outlines. But our doubts would still be immanent, and of a piece with the scientific endeavor" [Quine]. Never can <u>all</u> ontological commitments be doubted simultaneously; one would be "overreacting" if one thought otherwise (Gibson:1989:5).

In short, as Gibson and Quine argue, "epistemology does not occur in an "ontological vacuum" (Ibid:5). This is an important point for our analysis which claims to be uncovering a reality (ontological) claim in Maturana's theory of structure determinism. Maturana would apparently accept this description of his efforts as resting on scientific presuppositions -- but with a difference: namely, that his version of science does away with the "objects" of knowledge:

> [Our] explanation of cognitive phenomena...is based on the tradition of science and is valid insofar as it satisfies scientific criteria. It is singular within that tradition, however, in that it brings forth a basic conceptual change: cognition does not concern objects, for cognition is effective action.... (Maturana and Varela:1987:244).

The argument from illusion, and in general the skeptical challenge to knowledge, often begins from a scientific (indeed

physicalistic[33]) view of the world -- this much Maturana (and other skeptics) is likely to accept. Yet his epistemology-NR compels him to adopt the idealist conclusion that "cognition does not concern objects." Put somewhat differently, and in a way that highlights his initial (and paradoxically realist) commitments, Maturana's claim appears to be that the scientific *realist* viewpoint undermines the common-sense realist one. As Devitt writes,

> The area of common sense that seems most threatened by science is that concerned with the secondary qualities, especially that concerned with colors....The problem is that physics seems not to countenance them:...the world of physics is a colorless, soundless, odorless, and tasteless world....So it is only from the physicalist standpoint that science threatens the common-sense view of the secondary qualities. Further it is only from the *scientific realist* standpoint that science threatens common sense (Devitt:1984:69).[34]

Let us put aside for the moment this problem of accounting for the so-called "secondary qualities" of objects and ask whether Maturana supplies any reasons for adopting his radically idealist view of common-sense or scientific entities. We shall see that he does not. I will first consider his curious use of the word "world" (3.6) and then take up in more detail the

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[33] See Vinci:1986:section V.

[34] It is of course open to the realist who wishes to defend the common-sense view of objects and their secondary qualities to adopt a pragmatic perspective on a portion of physics. From this perspective some of the posits of that science receive a purely instrumental interpretation: electrons, muons and curved space-time are simply instruments for dealing with the observable world. But this is just to show that the common-sense view of the secondary qualities of objects is left untouched by the theories of physics.

problem of the "underdetermination" of our theories by that world (3.7).

3.6 ON WORLDMAKING

Shortly after making the recommendation that we "put a question mark on any perceptual certainty" (1988a:10) Maturana writes:

> ...this connection between action and experience, this inseparability between a particular way of being and how the world appears to us, tells ut that *every act of knowing brings forth a world*....everything said is said by someone. Every reflection brings forth a world (Ibid:26).

That the *world* (call it "meaning-1") underdetermines our *theories of the world* (which are in part determined by our "particular way[s] of being" and mode of "reflection") is considered sufficient reason to have the latter theories replace the former, at least in the sense that they too merit the characterization "world" (call it "meaning-2"). Clearly, however, this complex characterization of Maturana's use of the word merely underlines the fact that the word "world" has changed its referent:

> Before, it [world (meaning-1)] signified nature, including us humans as we are located within it. Now, "world" [meaning-2] refers only to the experience created when sensory data are differentiated and organized by the system used for thinking them (Weissman:1989:514).

Assume world (meaning-2) broadly refers to our *experience*. What then is left of the world (meaning-1)? Maturana does invoke the specter of an amorphous "substratum" the *expectation* of which is needed, he claims, for "epistemological reasons" (Maturana:

1988a:47). It is important that he does not claim that the *existence* of the substratum is an epistemological necessity. Indeed, he cannot, according to his own doctrine, since "nothing [including the substratum, presumably] pre-exists its distinction [by an observer]" (Ibid:45).

If I have interpreted him aright, we merely *operate as if* there were a substratum.[35] The reason for that is the following. All scientific claims, according to Maturana, involve the specification of a "mechanism" that is able to "generate the phenomenon to be explained in the domain of experiences...of the observer" (Ibid:45). Furthermore, the generative nature of this mechanism is "constitutive" to the scientific explanation itself. It is important to note that we are remaining within the realm of observer-dependent distinctions. That is to say that Maturana is *not* claiming to be describing the nature of anything external to the scientific explanation itself, although he does refer to this as an "ontological condition" of science.

However it is here that we feel the urge -- in science as

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[35] An earlier attempt of mine to deal with this question (Konold and Johnson (1989) now seems to me to be inadequate. In that paper I implied that Maturana's treatment of the substratum amounts to a version of "weak" realism, a doctrine that claims that "something [however undifferentiated and uncategorized] objectively exists independently of the mental" (Devitt:1984:15). It now seems clear (see below) that the Maturana does *not* hold that "something" or "something-in-themselves" exist independently of the mental. Maturana's treatment of the reality of the substratum is even "weaker" than that. And if "weak" realism is nothing but "...an idle addition to idealism: anti-realism with a fig-leaf" (Ibid:15) then the earlier paper also erred in suggesting that Maturana's treatment of the substratum in some way "saves" him from idealism.

well as "everyday life" -- to "ask for the existence of a substratum independent of the observer in which everything [including the operation of the above generative mechanism] takes place" (Ibid:45). But just as soon as we attempt to talk about, "language," or make any sense of the notion of a substratum we "lose" it:

> Through language we remain in language, and we lose the substratum as soon as we attempt to language it. We need the substratum for epistemological reasons, but in the substratum there is nothing (no-thing) because things belong to language. In other words, nothing exists in the substratum (Ibid:46).

Maturana now faces the formidable (it would seem *impossible*) task of explaining how we achieve sufficient grasp of "it" (remember: "it" is "no-thing" or property) even to say what Maturana says of "it;" namely, that we "need it for epistemological reasons" or that "it permits what it permits" (Ibid:47). It would seem more accurate to say that we never even had this "world" (the substratum) to lose.

All this rather mystical talk of the substratum follows directly from Maturana's unique combination of three errors: he (1) fails to appreciate the condition of independence of the world from our descriptions and theories (C_{Ind}); (2) commits a linguistic variant of the epistemic fallacy in assuming that "things belong [exclusively] to language;" and (3) adopts a relativized-to-a-language ontology in order to accommodate his explicitly idealist epistemology-NR.

Let us assume for the moment that Maturana is entitled to speak of an ineffable realm of things-in-themselves. What then

could we conclude about the constraining properties of that non-existent, unspecifiable realm? All that we could say is that "we are constrained and that's that" (Devitt: 1984:192).[38] Used in this fashion the notion of constraint has no explanatory value at all. And that is why it is but an idle addition to idealism. It is worth repeating at this point that realists, in holding to Cind, need not (indeed should not) argue for the independent existence of a world of things-in-themselves forever beyond our ken. And Maturana has made it abundantly clear that he is not "interested" in that world either. Now Maturana could maintain that these "worlds" (meaning-2) that are brought forth by reflection are just not "the world" (meaning-1) alluded to a page earlier. It is perfectly legitimate to use the word "world" in two (or more) distinct ways, so long as it is clear at any point which meaning is implied. So Maturana is completely within his rights to use the word "world" to refer to that which is "brought forth" (worlds (meaning-2)) in "someone's" reflections on "the world" (meaning-1) (Maturana:1988a:33).

But given Maturana's antirealist claim that there can be no talk of "things" existing independently of what the observer "does," he is not left with two "worlds" -- one (meaning-1) referring to that common world of natural things that the realist sees as the cause, or ontological grounding, of our experience

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[38] Note the similarity between Devitt's conclusion and what Maturana ends in saying ("languaging") about the "substratum" (his version of this unspecifiable realm): "all we can say is that it permits what it permits..." (Maturana:1988a:47).

(however indeterminate), and another (meaning-2) which results from a particular way of "being" or "reflecting." There are only these latter, "subject-dependent" realities (Maturana:1978:62):

> Without observers nothing can be said, nothing can be explained, nothing can be claimed...in fact, without observers nothing exists, because existence is specified in the operation of distinction of the observer (Maturana:1988a:46-47).

In other words, existence, as "something" that is "specified in the operation of the observer," is just another attribute of entities that we, acting as observers, confer upon those "things" that we create in the process of carving up our experience. That ferrets and trees -- or even people other than the observer for that matter -- come to exist and have certain properties is entirely dependent on the "subject-dependent," human activity of making distinctions:

> The operation of distinction that brings forth and specifies a unity, also brings forth and specifies its domain of existence....(Maturana:1988a:16).

It should be clear at this point that Maturana, taken literally and with his tacit, realist ontological commitments aside, is not even a "weak" realist, in Devitt's sense. He is not in any way committed to, that is, the independent existence of unknowable, unspecifiable things-in-themselves. He is simply a metaphysical idealist. The world he can claim to have saved is nothing other than the world (meaning-2) of Putnam's solution to the referential gap between our theories and the world (meaning-1) that consists in the (metaphorical) situation where "the mind and the world jointly make up the mind and the world" (Putnam: 1987:1). That solution amounts to an unqualified rejection of

the very idea of a mind-independent reality where objects or things do not exist independently of our thinking or making. Rather,

> ...we cut up the world into objects when we introduce one or another scheme of description. This construction of objects is not from conceptually uncontaminated experiential inputs for those inputs are themselves to some extent shaped by our concepts (Devitt: 1984:191).

3.7 THE ROLE OF THE OBSERVER

As I briefly noted above, science only threatens to undermine our common-sense view of objects when taken realistically and physicalistically (an anti-realist or non-physicalist view of science leaves the common-sense view "untouched"). And so taken, the most that we could possibly conclude is that our common-sense view of objects is "error-ridden" (Devitt:1984:69), or that we "cannot know some of the things that we think we know" about these objects (Vinci: 1986:571). We are certainly *not* entitled to the idealist conclusion that these objects do not exist:

> To get the anti-Realist conclusion we need the further premise that any common-sense physical object *must* have secondary qualities. But there seems to be no good reason for anyone who, on scientific grounds, is anti-objectivist to adopt this essentialist premise. Rather, he should view a common-sense physical object as a system of unobservable particles that is wrongly thought to have secondary qualities (Ibid:69).

So what should we conclude from Maturana's treatment of illusions? His claim is that our experiences of illusions -- as experiences that "we can not deny"

> ...show how our experience is moored to our structure in a binding way. We do not see the "space" of the world; we live our

field of vision. We do not see the "colors" of the world; we live our chromatic space (Maturana and Varela:1988:21-3).[37]

Two comments are in order. First, who would doubt that "our experience is moored to our structure in a binding way"? It would be absurd to maintain that we could experience *anything* in a way that was not somehow dependent on our "structure." This evokes Putnam's unreasonable suggestion that realism, in speaking the unspeakable, involves a commitment to judging, without dependence on any concepts at all, whether our theories are true of reality (Putnam:1981:130).

Second, on the basis of our analysis in section 3.6 we may now ask: What is the "world" to which Maturana and Varela make reference in this last passage? Is it a world (meaning-1) that exists and has a nature (even though that nature may not be captured by our colorful and spatial ways of "living" in it) which is independent of our particular "ways of seeing?" Clearly, the idea that objects lack secondary qualities like

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[37] Bartley (1987:39) defending the realist position he calls "representationalism" notes that the fact that one cannot correct one's visual perception of many illusions even when fully cognizant of the source of the illusion, does not entail that we are completely "trapped" by the illusion. It is often the case, he claims, that we can "escape" from the illusion *intellectually or conceptually* while remaining trapped by its perceptual effects. He even finds examples of just this process in the work of Bateson (1979:37, Ch7), who usually writes from the perspective of "presentationalism" (a form of idealism that limits our explorations of reality to that which appears or presents itself to us). While these are valuable insights, taken alone they cannot represent an answer to Maturana. For the conceptual devices of Bartley represent merely different experiences serving as a "meta-experiential authoritative criteri[a] of distinction" (Maturana:1988a:10), which are themselves subject to the same limitations as the original "illusory" experience.

color does not entail the more radical thesis that these objects do not exist, but merely that our common-sense view of them could be false. Indeed, this "scientific realist" perspective on the matter seems to be in line with what Maturana and Varela are talking about at this point when they go on to say

> Doubtless...we are experiencing a world. But when we examine more closely how we get to know this world, we invariably find that we cannot separate our history of actions -- biological and social -- from how this world appears to us. (Maturana and Varela:1988:23).

Somewhat surprisingly, they maintain it to be "doubtless" that we are indeed experiencing a world. And it seems, moreover, that this passage implies our experiencing a common world, since they could, after all, have said that *we* are experiencing *our worlds*. The only qualification appears to be that in judging the adequacy of our conceptions of the world we must take into account the possible effects of the observer and her or his methods of observation on what is observed. (We may be "imposing" the secondary qualities on the objects of our knowledge, for example).

This is certainly not an uncommon view of the relationship between knowers and known. Many realistically minded scientists have long argued that it is not contradictory to maintain both that observational results can be theory-neutral and that there can be no data without concepts.[38] Indeed Maturana could simply be read as saying that our knowledge of the world is colored by our concepts, and hence open to error:

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[38] See, for example, Kordig:1971:ix; Scheffler:1982:Ch2.

> Our incapacity to experientially distinguish between what we socially call illusion, hallucination, or perception, is constitutive in us as living systems. *The recognition of this circumstance should lead us to put a question mark on any perceptual certainty* (Maturana:1988a:10, emphasis added).

Or as Richard Bernstein writes:

> If we focus on the history of our understanding of science during the past hundred years, from Peirce to Popper, or on the development of epistemology during this period, we discover that thinkers who disagree on almost everything else agree that there are no nontrivial knowledge claims that are immune from criticism (Bernstein:1983:12).

It is important to note that we could still assume at this point that it is precisely the *known* world (the world that in my view is not well-lost) that, in Maturana's words, we are "experiencing" and "getting to know." There is nothing to prevent us from interpreting Maturana as making reference to human experience -- in the words of another contemporary realist -- as "the effect of our interactions with a world whose existence and character are independent of the ways we think and talk about it" (Weissman:1989:515).

Maturana suggests that on the basis of this recognition of the role of the observer in *determining what is observed* "we should put aside our daily tendency to treat our experience with the seal of certainty, as though it reflected an absolute world" (Maturana and Varela:1988:25). It seems reasonable to expect some indeterminacy of reference between our theories of the world and the world. We might interpret this to mean that our theories of the world can be mistaken (or, more fashionably -- that they are "fallible"). In more analytical terms, it is not the objects that we are referring to that are indeterminate, but *which*

objects we are referring to. The indeterminacy, in other words, is in our *reference* to objects and their properties. The fact that our senses sometimes deceive us -- as the familiar examples of illusion show -- is a form of Cartesian doubt that "reflects the truth of "underdetermination" of our theories by the world (Devitt:1984:49). Clearly, to a certain degree, we impose a view of the world on the world, perceiving in many instances what we wish, or expect to see. Even a "robust Realist" like Devitt need not deny this much "interest-relativity" of explanation.

To sum up: Maturana, read as a scientific realist, may be in a position to doubt the veracity of the common-sense view of secondary qualities of objects, but not the very existence of those objects -- that would be an overreaction. If he is a scientific antirealist (instrumentalist), then his conclusions have no direct bearing on the common-sense view. Either way, Maturana's analysis of illusions does not suggest reasons for adopting his radically idealist perspective on our knowledge of the everyday objects of the world.

3.8 THE LINGUISTIC CONSENSUS

The radical idealism that I have found to undergird Maturana's theories is not an attractive doctrine and one that Maturana explicitly rejects as a solipsistic "trap" (Maturana and Varela:1989:133-134). I have argued that his willingness to talk about a substratum in which all this constructive activity associated with observing takes place cannot "save" him. In this

final section I want to consider further the (often only implicit) suppositions of modern linguistic analysis that give rise to this talk.

In denying the cognitive attainability of a mind-independent realty -- the constitutive ability of the observer to "attend-to-without-altering" something -- theorists such as Maturana commonly adopt the positive counterpart that the "activity of the knower is a formative, constructive, or productive one *but not a radically creative one*" (Pols:1986:23 emphasis added). In other words, the knower produces or constructs what is known but only on the basis of what he or she does not produce. We shall refer to that something which is "given as material for a construction" as the "nonpropositional" (Ibid:24).

Despite all talk about the abandonment of the "illusion of the empirically given," Pols (1986) suggests that there is indeed a sense in which the nonpropositional is viewed as "given" to modern analytic philosophers who have formed what amounts to a *linguistic consensus*. We can list a few examples of the ways in which the nonpropositional may be given to the knower: (1) given for worldmaking; (2) given to be known via the imposition of propositional form; (3) given to stimulate the production of paradigms it is nevertheless independent of; and (4) given to be pragmatically coped with (Pols:1986:24).

This new sense of the given -- like Maturana's substratum that "permits what it permits" -- is meant to "rescue the consensus from radical idealism" (Ibid:24). The confusion that

results from this reliance on what Pols calls "dogma of the ineffable empirical stimulus" is also partly the result of Maturana's acceptance of the complementary myth of "linguistic enclosure":

> The items or entities entertained by rationality when it knows...are literally and merely propositions. But what rationality entertains is propositional (or linguistic) not just when rationality is directed upon a complex of propositions such (say a body of theory) or upon a single proposition, but also when (before philosophy intervenes) it supposes itself to be directed, by way of the senses, upon some "item" or "items"...or "world" whose nature or natures, *as entertained*, are not propositional....Alternatively: rational *experience* is linguistic. (Ibid:25).

The influence of this myth leads members of the linguistic consensus to view the realist as attempting the impossible; namely, to "break out of discourse to an arche beyond discourse" (Sellars:1963:196). Similarly, Rorty suggests that knowledge and justification are nothing more than "social phenomena" or "propositions-brought-forward-in-defense-of-other-propositions" (quoted in Pols:1986:25). And in Maturana's words:

> Since everything that is said is said by an observer to another observer, and since objects (entities, things) arise in language, we cannot operate with objects (entities, things) as if they existed outside the distinctions of distinctions that constitute them (Maturana:1988a:44).

We may now identify more precisely why it is that Maturana "loses" the substratum just as he attempts to speak of it. According to the "dogma of the ineffable empirical stimulus," whenever we attend rationally to "objects" or "things" of the world (the nonpropositional), the rationality of our focus arrives only at the propositional outcome of its own constructive, or productive activity. Anything else enters only

at "subrational level:"

> The nature of the insistent presence of the nonpropositional [the substratum in Maturana's case, which is an "epistemological necessity"] in the propositional outcome of the formative, or constructive, power of our (empirically engaged) rationality *cannot be rationally expressed* (Pols:1986:27, emphasis added).

So the structure (if it has such) of the nonpropositional qua nonpropositional is not available to the rational observer. Indeed, although it is said to "function as a stimulus to cognitive progress" (Ibid:28),[39] the nonpropositional substratum remains "ineffable" in at least two senses. First, as just noted, any structure that it may have on its own remains outside the possible scope of our formative awareness. And Second, it remains ineffable in respect of the way in which it could serve as a stimulus to that awareness. Pols concludes that:

> philosophers who are dominated by the [above two dogmas] should acknowledge that if they wish to speak of reality they must use the word only in a Pickwickian sense. They should be content with a propositional "reality," a rationally-formed "reality." a Linguistic "reality"; and should give up any claim to reality tout court, reality without qualification (Ibid:28).

Pols conclusion that few "consensus" members are willing to settle for this supports our attribution to Maturana of a reality claim in the strong (non-relative) sense.[40]

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[39] Notable examples include: the "inaccessible raw material of Goodman's worldmaking," the "paradigm-independent stimuli" of Kuhn, the "substratum" of Maturana, and the "materia prima" of Edmond Wright (see Pols:1986:27, and Wright:1986:15).

[40] Pols notes that the one-time realist Hilary Putnam seems not content with merely a propositional, Pickwickian "reality," but actually engages in a "hankering after the real article" (p.28). Putnam's emphasis on the "extratheoretic ideal" towards which theories (as "successive approximations to a correct description") converge belies his search for an unqualified, rather than merely a Pickwickian or relativized-to-a-langauge

It is undeniable, of course, that Maturana both presents us with a linguistic "reality" ("we should in fact apply the notion of reality to this very domain of *descriptions* (Maturana: 1980a:51-2)) and argues for subject-dependent or "relativistic" (Dell:1985:10) realities in place of the traditional notions of "objective reality" or the "really real:"

> Every domain of existence is a domain of reality, and all domains of reality are equally valid domains of existence brought forth by an observer as domains of coherent consensual actions that specify all that is in them (Maturana:1988a:48-49).

Is it a subject-dependent ontology or linguistic reality that underlies the constitutive inability of the observer to talk about a world of things that exist "independently of what he or she does" (Ibid:50)? One would guess that it had to be, and in fact Dell and Maturana, as we have seen, are quite explicit about the subject-dependent nature of the real: "Maturana's structure determinism says nothing about a "real" or objective world" (Dell:1985:10). But in the end both Maturana and Dell present the doctrine of structure determinism as a claim about the way the world really is structured, and not just according to Maturana's (or Dell's) opinion. Held and Pols (1985a,1985b,1987) offer an extensive list of the equivocation on the part of Dell and Maturana between ontological claims in the Pickwickian (subject-dependent) sense and reality claims in the "common" sense which purport to say something about the way the world "really is" independently of the observer (Held and Pols:

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reality (Ibid:28).

1987:458). While it is only in this latter sense that I find such claims worthy of any consideration, that formulation of Maturana's system which claims for it the status of a reality claim in the common sense throws Maturana into a blatant contradiction. In adopting an epistemology that asserts the absolute and "equal validity" of all observations, Maturana is in no position to make a reality claim that reflects the nature of the world independent of the distinctions he happens to make (see Held and Pols:1987:460).

I shall close by identifying two clear examples of this ontological tension that plagues Maturana's system. His claim that the world is structure determined has as its corollary the doctrine of "structural coupling" (Dell: 1985:12; Maturana: 1988a:38). Since my purpose all along has been merely to underline the contradictory senses of "reality" that these doctrines contain, a brief definition will suffice. Maturana equates structural coupling with existence: for an entity to exist it need only be structurally coupled to the world in which it exists. He explains that "structural coupling as the relation of complementarity between a unity and its medium...is a constitutive condition of existence for every unity" (Quoted in Dell:1985:12). The following quote from Dell indicates the manner in which the contradiction is avoided only by "taking a key term [ontology] in two distinct and opposed senses" (Held and Pols:1987:459):

[1] What is important to understand here is that perception is not and can never be objective -- and yet, *all* observations have

> equal validity....None of these observations are objective, but [2] all of them are valid in that they are specified by the structure of the observer in conjunction with what that observer's interaction with the medium allows. [3] *For these reasons, Maturana insists that all realities which we bring forth are legitimate* (Dell:1985:16, numbers in brackets mine).

[1] is a statement of Maturana's acceptance of an epistemology-NR, or subject-dependent epistemology which he adopts on the basis of experiential indistinguishability of perception and illusion. [2] suggests, almost incredibly, that there is a way that we are that determines the truth of [1]. [2], in other words, contains an explicit and quite general ontological claim about the nature of human cognition and observation contained in the doctrine that we are structure-determined entities. [3] wrongly concludes from [1] and [2] that all our views of the world, including that of structure determinism and in contradiction to the implied universality of [2], are merely subject-dependent "realities." The contradiction, once again, consists in putting forward such a general claim about the functioning of human cognition as that in [2] and at the same time maintaining that that functioning can only result in the creation of subject-dependent realities.

The same equivocation is contained in the following passage taken directly from Maturana and Varela. It clearly begins with an ontological claim in the common sense and ends with a somewhat vague reference to the subject-dependent nature of the "world" that is available to us (that we can "have"). So it would seem that Maturana, by the end of the passage, has undercut the force of his claim to have identified something about the way we *are*

that is not dependent on what we "create with others." I have placed in italics the two key phrases that evoke a quite general ontological claim and a Pickwickian one, respectively:

> ...*the uniqueness of being human* lies exclusively in a social structural coupling that occurs through languaging, generating (a) the regularities proper to the human social dynamics...and (b) the recursive social human dynamics that entails a reflection enabling us to see that as human beings [there is still a trace of a reality claim in that last phrase] *we have only the world which we create with others*...(Maturana and Varela:1988:246).

As Held and Pols explain, Maturana exempts his own doctrine from the "relativistic strictures it lays down for the rest of us" (1987b:467). And this results from the fact that Dell and Maturana, for whatever reasons -- have "not been able to operate without making reality claims they have failed to notice (Ibid:468).

We might characterize the common denominator of all such idealist positions as follows: "knowing is making, where using an interpretation to create a thinkable experience makes a world" (Weissman:1989:517). This sounds very close to one of Maturana's more frequently used expressions: "all doing is knowing and all knowing is doing" (Maturana and Varela:1988:27). A direct result of this line of thinking, as Maturana himself notes, is that "we have only the world we bring forth with others" (Ibid:248).[41]

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[41] The word "we" here is certainly important, and signals the potential for Maturana to be asserting the social- or cultural-dependent nature of our views or constructions of "our" world. He in fact claims that our world is a "linguistic world that we build with others" (Maturana and Varela:1987:235). However, talk about the "social construction of reality" or the "linguisticality" of our experience is prone to the same sort of equivocation on the nature of the independence dimension of traditional realist claims as that outlined above. Yet it has

"Nothing exists" apart from this world. In other words, Maturana unwittingly subscribes to what has been called the "cardinal principle of idealism," namely, the principle that "being is dependent on the knowing of it" (Brown:1988:145). It comes as no surprise, then, to find Maturana claiming that "human existence is cognitive existence," or, more specifically, "the atom and the hydrogen bomb are cognitive entities....[t]hat is their reality" (Maturana:1988a:51, see also Maturana:1988b:80)

To the extent that we follow Maturana in seeing such weapons as cognitive entities it would seem to follow that all of us who think about them are directly responsible for "bring[ing them] forth" (Maturana: 1988a:51). This clearly adds up to more than the suggestion that we take more responsibility for our actions. For when we conjoin statements such as "[e]very thing is cognitive" and "everything is human responsibility" (Ibid:51) with the subject-dependent and Pickwickian nature of Maturana's "reality," the responsibility for such things could only be individual and total.[42]

The suggestion that "we" take responsibility for such things sounds plausible only when we forget the Pickwickian nature of Maturana's reality claims. The suggestion that there is no

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been my point all along that Maturana, given his epistemology-NR, is not entitled to assert the independent existence of any of the possible objects of knowledge, including humans. He apparantly recognizes the problem and attempts a brief (and hardly convincing) transcendental proof of there being "at least an other being" (Maturana:1978:60).

[42] See MacKinnon (1987) for some suggestive remarks on this "blame the victim" nature of Maturana's thought.

aspect of reality to be "discovered" (but only invented or constructed) prompts critics to ask how such mind-dependency fits with some of the more obvious constraints that the world around us places on our formative or constructive powers. "If all entities are 'cognitive entities' (the questioning typically proceeds), then what is stopping you from walking through that wall?"[43] Maturana's answer is that we have so constructed ("brought forth") the world (including the wall in question) as to make it impossible for the constructions we call humans to pass through it.[44] The point is that, for many people (and before philosophy intervenes), this anthropocentric account of the real world serves as a reductio of Maturana's doctrine. It has been the argument of this paper that those intuitions are both correct and that we have good reasons for believing them. Indeed -- and this follows from my brief point concerning ecology in the introduction -- if we are to achieve the very far-reaching "multiverse"-related changes that Maturana calls for, then we *must* believe those particular intuitions.

Maturana at one point describes himself as attempting to "[walk] the razor's edge" between the two "extremes" of realism

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[43] Marx was confronted by a similar problem nearly 150 years ago in the "new revolutionary philosopher" who had the idea that "men were drowned in water only because they were possessed with the idea of gravity" (Marx and Engels:1978:37).

[44] In his own words: "We do not go through a wall in the praxis of living because we exist as living systems in the same domain of operational coherences in which a wall exists as a molecular entity, and a wall is distinguished as a composite entity in the molecular space as that entity through which we cannot go as molecular entities" (Maturana: 1988a:50).

and idealism (Maturana and Varela:1988:133).[45] In this he has not succeeded: a reformulation of Maturana's doctrine along the lines of the one alternative to realism noted at the start of this essay would simply be a form of radical idealism. We have seen that in order to remain within the confines of his epistemology-NR (and escape EC) Maturana describes himself as one who is presenting a doctrine free of all the ontological/ metaphysical commitments of those (realists) whom he criticizes. I hope to have shown that self-description to be false.

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[45] It is not coincidental that Maturana's chosen metaphor represents an impossible task.

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